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## THE SPECIFIC CHARACTERS AND DISTRIBUTION OF *AGABUS VANCOUVERENSIS* AND *A. HYPOMELAS* (COLEOPTERA, DYTISCIDAE) \*

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In describing *Agabus vancouverensis mihi*, and in separating it from *hypomelas* and *irregularis* Mannerheim (Canad. Ent. 69 (7):146-150, four text figs. July, 1937), I did not give a key to the species, and failed to note certain diagnostic characters. Since then the known distribution of the species has been considerably extended, as reported below.

### KEY TO THE SPECIES

1. Sulcus at apex of metasternum (i.e., between mesocoxae) rudimentary, shallow and narrow; prosternal process shorter, broader, evenly convex, smooth, finely punctate; parameres of male genitalia sparsely haired along dorsal margin and having an apical blade-like extension; ovipositor of female strongly chitinated, glabrous except for a group of setae arising from a preapical median socket. Larger species, 7.5 to 9.5 mm. long. .... *vancouverensis*
- Sulcus at apex of metasternum well defined, deeper and broader; prosternal process narrower and more elongate, flatter, usually with a definite median longitudinal keel, irregularly and more coarsely punctate; parameres without an apical blade, but with a dense brush of hair along the apical two-fifths of dorsal margin; ovipositor of female less strongly chitinated, pubescent, the apical group of setae arising nearer the inner margin. Smaller species, 6.5 to 8.0 mm. long. (*hypomelas*) ..... 2
2. Prosternal process on one plane, or almost so, to the apex; usually with hairs on either side of the median keel. .... *hypomelas hypomelas*
- Prosternal process not on one plane, shorter and blunter, the apical half (in profile) inflated and thence curving quite strongly towards the body ..... *hypomelas irregularis*

### *Agabus vancouverensis* Leech

Previously recorded from the mountains near Vancouver, B. C., Mt. Arrowsmith on Vancouver Island, and Mt. Rainer, Wash., all near the coast. In June and early July the adults are fairly common in small alpine pools formed by the melting snow. The holotype and allotype were taken in a tiny pool in a rill, hardly a yard below its source in the snow by the ski-jump on Hollyburn Ridge, above Hollyburn (also called West Vancouver). The beetles were feeding in part on the bodies of dead insects trapped earlier in the snow, refrigerated, and finally washed out. Examination of the stomach contents of four topotypical *vancouverensis* disclosed the remains of Diptera (Chironomidae, Syrphidae) and Hymenoptera (Chalcidoidea).

The following new records include one from far inland, in central British Columbia. WASHINGTON: Mt. Baker, 9.IX.37 (W. G. Mathers). BRITISH COLUMBIA: Head of Chemainus Valley, 5,000 ft. elev., Vancouver Island, 11.VIII.40 (K. Graham); Forbidden Plateau, Vanc. Isl., 7.VII.31 (J. D. Gregson); Agassiz, July, 1937 (G. L. Steele); Thornhill Mt., Terrace, rock pools at 5,000 ft. elev. (Mrs. M. E. Clark); Omineca Mts., lat. 56° 8', long. 126° 35', elev. 4,800 ft., 13.VII.41 (G. B. Leech); pond, 6,500 ft., Tengville Lake, near Pemberton, B. C., 1.VIII.45 (G. P. Holland).

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**Agabus hypomelas hypomelas Mann.**

Mannerheim described *hypomelas* as from "Habitat in insula Sitkha D. Eschscholtz." (Soc. Imp. des. Nat. de Moscou, Bul. 16 (1):221, 1843).

In the hope that cotypes might be available in Finland, I wrote in 1939 to Dr. Richard Frey, custodian of the Museum Zoologicum Universitatis of Helsingfors. He very kindly loaned two specimens, both females; one carried labels reading "Sitka. Holmberg. Agabus hypomelas Mannh. Mus. Hels. No. 530", the other "Sitka, Holmberg. Mus. Hels. No. 531". These beetles probably are not cotypes, but they are certainly contemporary topotypes, and thus of great value. They validate my previous conception of the species and are in full agreement with the specimens mentioned in my 1937 paper.

*New Records.* ALASKA: Kodiak, August, 1942 (K. L. Maehler); Child's Glacier, 22.VII.1924 (H. C. Fall). BRITISH COLUMBIA: Thornhill Mt., Terrace, rock pools at 5,000 ft. elev. (Mrs. M. E. Clark); Omineca Mts., lat. 56° 8', long. 126° 35', elev. 4,800 ft., 13.VII.41 (G. B. Leech); Wolverine Range, Manson River district, elev. 5,500 ft., 13.IX.40 (G. B. Leech); UTAH: Uinta Mts., Tyrol (sic) Lake, elev. 9,600 ft., 29.VIII.40 (H. P. Chandler). This last specimen was correctly identified by Harry Chandler, who subsequently loaned it to me. He found it in company with a number of *A. strigulosus* (Crotch) under a log in shallow water.

**Agabus hypomelas irregularis Mann.**

Mannerheim (*op. cit.*, 26 (3):159-160, 1853) based his description of *irregularis* on a specimen "Ad rivulum fl. Tschunuktnu peninsulae Kenai, medio Septembris, individuum unicum in volatu cepit D. F. Frankenhäuser."

Crotch (Trans. Amer. Ent. Soc., 4:423, 1873) placed *irregularis* as a synonym of *hypomelas*, presumably from the description alone. In 1937 I used the name for a form allied to *hypomelas*, but readily distinguished by the shape of the apical half of the prosternal process. There is also a difference in distribution, *irregularis* being known from the Aleutian Islands to Yakutat Bay (lat. 60°, long. 139°), and *hypomelas* from there south at least to Utah.

These facts lead me to consider *irregularis* (*sensu mio*) a subspecies of *hypomelas*, though there is no modern knowledge of Mannerheim's type of the former. The occurrence of *hypomelas hypomelas* at Kodiak, and at Katmai is thus most interesting; possibly *h. irregularis* occurs at the same places in slightly higher elevations.

**NEW CANADIAN DIPTERA (TACHINIDAE) \***

BY A. R. BROOKS,

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The following descriptions of species and genera are based on specimens in the Canadian National Collection. As many of the species have been reared from harmful hosts by the Canadian Forest Insect Survey, descriptions are offered at this time to allow for accurate naming of these specimens. I am greatly indebted to H. J. Reinhard for the loan of material and his many notes on allied forms.

**Genus Euthera Loew**

1866—Cent. Dipt., VII, 85, genotype *E. tentatrix* Lw.

The three species of *Euthera* occurring in North America differ rather widely from each other and in the restricted sense would represent three allied genera in the tribe Eutherini. Very few specimens of this group are known and from widely separated localities so that it seems wiser to leave the North

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American species in one genus for the present pending more knowledge of these interesting forms.

The three species may be separated as follows:

1. Parafacials with a single row of strong hairs extending to the lowest third; last section of the fifth vein one-fourth the length of the preceding section; second antennal segment half the length of the third (B. C.) ..... *setifacies* n. sp.
- Parafacials bare.....2
2. Abdomen black; last section of fifth vein one-eighth the length of the preceding; no intrapostalar bristle; marginal and discal bristles present on the intermediate abdominal segments, the discals sometimes absent in the female; third antennal segment twice as long as the second; clypeus as long as wide; cheek about one-third eye height in the female; one proclinate and one reclinate orbital in the female (N. Y., Ill., Ia.) ..... *tentatrix* Lw.
- Abdomen mostly red; last section of the fifth vein over one-fifth the preceding; a fine intrapostalar bristle present; discal bristles absent from segment two; third antennal segment nearly two and a half times as long as the second; clypeus longer than wide; cheek one-fourth eye height in the female; two proclinate and one reclinate orbital in the female (Tex.) ..... *bicolor* Cq.

#### *Euthera setifacies* n. sp.

*Male and Female.* Length 6-7 mm. Head mostly yellow; parafrontals, parafacials, upper part of occiput and a V-spot at the base of the epistoma black; third antennal segment dark brown beyond the arista; frontal vitta light yellow, the color extending well down on the occiput; parafacials and parafrontal silvery grey pollinose with a black shining area next to the bases of the antennae; palpi yellow. Thorax and abdomen wholly black, the abdomen a little brown on the sides, faintly grey pollinose. Legs except the mid and hind coxae yellow, the tarsi somewhat darkened. Wings whitish, yellow at the base and with two dark bands, one taking in both crossveins, the other extending along  $M_1$ ; alulets black; squamae yellow; halteres with a dark head.

Facial carina low and rounded; epistoma short and warped forward; parafacials narrowed below and with a row of stout hairs next the facialia, extending to the lowest third of the eye; third antennal segment slender and with a rounded tip, just over twice as long as the second segment; eyes oblique, oval; occiput bulging below; vertex in male one-sixth head-width, in the female four-thirteenths head width; frontalia three times the width of the parafrontals in the female, somewhat widened behind; two proclinate orbitals in the female; ocellars stout. Acrostichals 3.3, the presutural next the suture; dorsocentrals 4.4; intraalars 2.3; supraalars 2.2; no intrapostalar; four lateral scutellar pairs, the first and third shorter; apical scutellars three-fourths the length of the lateral and erect; one weak discal scutellar in the male. Abdominal segments two and three with a pair of marginals in the male, lacking on segment two in the female; one pair of discals and a marginal row on segment four. Legs stout, the fourth tarsal segment of the female fore leg somewhat widened. Wing normal; apical crossvein strongly bowed inwards; cubitus an acute angle; small crossvein near the tip of  $R_1$ ; outer crossvein oblique, nearer to the cubitus than to the small crossvein; last section of cubitus about one-fourth preceding section.

*Holotype*—♂, Trinity Valley, B. C., July 25, 1937 (K. Graham); No. 5514 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data as type, but dated July 26, 1937.

*Paratype*—♂, same data as type, but dated July 27, 1937.

***Pararehytas hammondi* n. sp.**

Easily separated from *P. decisa* (Wlk.) by the grey head, whitish occipital pile and grey pollinose mesonotum.

*Male.* Length 10-11 mm. Antennae and arista black, the third antennal segment broad, equal to the second in length; frontalia and palpi reddish brown; parafrontals subshining black with very light grey pollen; face, parafacials, cheeks and occiput silvery grey pollinose; hairs of the parafacials and cheeks black; occipital pile white or pale yellow.

Thorax black, scutellum red; prescutum lightly grey pollinose, showing five dark vittae; mesoscutum brown pollinose, the vittae distinct only next the suture; chaetotaxy as in *decisa*. Wings hyaline, milky in the costal region; small crossvein, basal area and alulets black; squamae deep velvety black; halteres with a black head. Legs black.

Abdomen brown with a darker brown or black central vitta and covered with faint brown pollen; intermediate segments each with one strong pair of discals and many strong erect bristle-like hairs; fourth segment with two discal rows.

*Female.* Except for sexual differences the female is similar to the male.

*Holotype*—♂, Avonmore, Ont., 13.VII.1939 (G. H. Hammond); No. 5516 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data as type.

*Paratypes*—11 ♀, Avonmore, Ont., 8.VIII.1939 (G. H. Hammond); 40 ♂, Avonmore, Ont., 13.VII.1939 (G. H. Hammond).

In *P. decisa* (Wlk.) the head is yellow or golden pollinose, the parafrontals heavily pollinose, the occipital pile bright yellow or golden and the prescutum yellowish pollinose. The Canadian National Collection contains specimens of *decisa* from all Canadian provinces. One specimen in the collection from Oak Creek Canyon, Ariz., is similar to *decisa* but is more robust and with the abdominal discals doubled or tripled on the intermediate segments; the specimen undoubtedly represents a distinct species.

***Dichocera robusta* n. sp.**

This prairie species differs from *D. lyrata* Will. (Ent. News, VI, 32, 1895) chiefly in the more robust body and heavily greyish yellow pollinose head, thorax and abdomen.

*Male.* Length 10-11 mm. The divided antennae wholly orange, arista dark brown; frontalia deep reddish brown; rest of head black, the parafrontals, parafacials, cheeks and occiput heavily opaque grey pollinose; palpi yellow; occipital hair white. Thorax dark, the scutellum red tipped; mesonotum heavily greyish yellow pollinose, the four broad vittae very distinct for their entire length; chaetotaxy as in *lyrata*. Wings clear, slightly milky; squamae white; halteres brown. Legs black, claws and pulvilli short. Abdomen dark with a narrow reddish tip and red genital segments, densely greyish yellow pollinose with changing reflections as in *Sarcophaga*; a pair of discals present on the third segment and a discal row on segment four; forceps from dorsal view broadly rounded at the tip, slightly widened at the distal third, shorter than the accessory processes.

*Female.* Except for sexual differences in the non-divided antennae, wider parafacials, etc., the female is similar to the male.

*Holotype*—♂, Taber, Alta., June 30, 1924 (H. L. Seamans); No. 5517 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Orion, Alta., Sept. 9, 1924 (H. L. Seamans).

*Paratypes*—1 ♂, Lethbridge, Alta.; 1 ♂, Kipp, Alta., Sept. 9, 1924 (H. L. Seamans); 1 ♂, Swift Current, Sask., 21.VI.1937 (A. R. Brooks); 1 ♂, Saskatoon, Sask., July 24, 1924 (K. M. King); 1 ♀, Waterton, Alta., Aug. 13, 1922 (H. E. Gray).

*D. lyrata* Will., represented in the Canadian National Collection by specimens from Trinity Valley, B. C., is a smaller, lightly grey pollinose species with subshining black head, thorax and abdomen.

***Catalinovoria discalis* n. sp.**

Differs from *C. cauta* TT. (Ins. Ins. Mens., XIV, 38, 1926) chiefly in possessing discals on the intermediate abdominal segments and in the subshining thorax and abdomen.

**Male.** Length 6 mm. Antennae black, the first and second segments yellow; palpi yellow; frontalia reddish brown; parafrontals with light yellow pollen, the shining black showing through; face, parafacials and occiput grey pollinose; parafacial hairs sparse, black. Thorax subshining black with light greyish pollen, vittae hardly distinguishable. Wings clear, veins yellow; squamae white; halteres brown. Legs black, the femora lightly grey pollinose posteriorly. Abdomen subshining black, the greyish pollen thin except on the very narrow anterior margins of segments two, three and four; genital segments black.

Vertex half head width, the front slightly wider at the antennae; three proclinate and one reclinate orbital; parafacials with a few short hairs below the frontals; third antennal segment as wide as the parafacials, two and one-half times as long as the second segment; arista thickened five-sixths of the way. Thoracic chaetotaxy as in *cauta* TT., the scutellum with two long lateral pairs of bristles, a strong decussate apical pair, a preapical pair and two pairs of discals. Second and third abdominal segment with a pair of discal bristles, fourth segment with two discal rows and a weaker marginal row.

**Female.** The female is very similar to the male, but there is a tendency for the discal scutellars to be multiplied and irregular, the discals on abdominal segment two to be weak or absent and for the first discal row on the fourth segment to be incomplete.

**Holotype**—♂, Fredericton, N. B., 17.VIII.1913. (J. D. Tothill); No. 5518 in the Canadian National Collection, Ottawa.

**Allotype**—♀, Fort a la Corne, Sask., 14.7.1925 (K. M. King).

**Paratypes**—1 ♀, Tofield, Alta., Aug. 25, 1923 (E. H. Strickland); 1 ♀, Buckanan, Sask., 15.VIII.1925 (K. M. King); 1 ♀, Twin Brs., Alta., Aug. 1, 1924 (H. L. Seamans); 1 ♀, Amherst, Ohio, 4.13.1939 (H. J. Reinhard).

*C. cauta* TT. is a somewhat more robust form with the third antennal segment three or four times the length of the second; the front, thorax and abdomen heavily pollinose and the intermediate abdominal segments without discals. The species is represented in the collection by specimens from Ontario, Manitoba and British Columbia.

***Metaplagia brevicornis* n. sp.**

This species appears to be intermediate between the genera *Metaplagia* Cq. and *Metavoria* TT., the third antennal segment of the male being just over three times the length of the second. It can easily be recognized by this character and by the short claws and pulvilli possessed by the male.

**Male.** Length 7 mm. Antennae black, segments one and two reddish; third antennal segment just over three times the length of the second; front flat, not as long as the slightly convex face; vertex two-fifths head width, the front widened to over half head width at the antennae; frontalia brown, narrowed anteriorly; parafrontals grey pollinose; two proclinate and one reclinate orbital present; parafacials half clypeal width and with two or three rows of hairs extending from the frontals to the level of the vibrissae; clypeus deeply sunk, the facialia set on edge; cheek two-fifths eye height; palpi yellow, as long as the haustellum, slightly widened at the tip; haustellum short, about as long as cheek height.

Thorax subshining black, lightly grey pollinose, the four darker vittae hardly distinguishable; chaetotaxy as in *occidentalis* Cq. Wing clear;  $R_5$  bristled to  $R^6$ ;  $M_3$  nearly midway; last section of  $C_1$  seven-tenths as long as the preceding



section; squamae white. Claws and pulvilli short, about as long as the last tarsal segment.

Abdomen subshining black with very narrow anterior silvery margins on segments two, three and four; second segment with a marginal pair; third segment with a marginal row; fourth with a submarginal and a weaker marginal row. Forceps long and narrow, curved ventrally, the accessory processes four-fifths as long as the forceps.

*Holotype*—♂, Teulon, Man., 11.VII.1923 (A. J. Hunter); No. 5519 in the Canadian National Collection, Ottawa.

*Paratypes*—1♂, Boucher, Sask., 2nd half of June; 1♂, Slave Lake, July 14, 1924 (O. Bryant); 1♂, Brackley Beach, P.E.I., 30.VII.1940 (J. McDunnough); 1♂, Stoneham, Mass., VII.21.10 (T. L. Patterson).

### *Chaetophlepsis semiothisae* n. sp.

This species is evidently closely allied to *G. orbitalis* Webber (Proc. U. S. Natl. Mus. 78, Art. 20, 2, 1931); the male however has but one orbital bristle and the abdomen of both the male and female is a dark olive color with the anterior margins of the segments shining silvery pollinose.

*Male*. Length 5.6 mm. Vertex two-fifths head width, the front slightly wider at the antennae; frontalia equibroad, four times the width of the parafrontals; frontal bristles four, extending one below the antennal base; one proclinate orbital; parafrontals with a few long hairs; third antennal segment very long and broad, reaching to the vibrissae, the third segment five to seven times as long as the second; parafacials very narrow, one-third as wide as the third antennal segment; arista thickened one-third way; cheek just under one-half eye height. Antennae black, the second segment and the base of the third brownish; arista with a brown ring at the centre; palpi yellow; front including the frontalia, face, cheek, and occiput grey pollinose, the front sometimes with a strong yellow or golden tinge; hairs of cheek and occiput white.

Thorax black, heavily greyish or greyish yellow pollinose, two darker vittae evident on the anterior half of the prescutum. Wings clear, veins yellow; squamae white or transparent behind; halteres yellow. Legs mostly black, all the tibiae yellowish-red; claws and pulvilli shorter than the last tarsal segment; fore tibia with two posterior bristles; mid tibia with one anteroventral, one anterodorsal and two posterodorsals; hind tibiae with three or four anteroventrals, six to eight anterodorsals and posterodorsals.

Abdomen olive green, with bright silvery pollen on the anterior fifth of segments two, three and four; intermediate segments with one pair of discals and marginals; fourth segment with complete discal and marginal rows, the central pair of discals set well forward at times; genital segments dark, the first pollinose, no hairs.

*Female*. Vertex 0.38 of head width; front with two proclinate orbitals; third antennal segment narrow with the upper tip pointed, three times as long as the second; mid tibia with two anterodorsals; otherwise except for sexual differences as in the male.

*Holotype*—♂, Constance Bay, Ont., 6.VII.1935 (T. N. Freeman); No. 5520 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Constance Bay, Ont., 5.VII.1935 (T. N. Freeman).

*Paratypes*—1♀, Constance Bay, Ont., 3.VII.1935 (E. G. Lester) ex. a lepidopterous larva on *Vaccinium*, probably *Itame fulvaria* Pack.; 1♂, 1♀, Salmon Arm, B. C., emerged Jan. 25 and Jan. 28, 1943, ex. *Nephtytia canosaria* Wlk.; 1♂, Low Bush, Ont., emerged 9.11.1943, ex. *Pero* sp.; 1♂, Nicholson, Ont., emerged 2.11.1943, ex. *Lamtidina fiscellaria* Gn.; 1♀, Smooth Rock Falls, Ont., 4.11.1943, ex. *Lamtidina fiscellaria* Gn.; 1♂, 1♀, Blewitt B. C., Feb. 23 and March 4, 1943, ex. *Semiothisa granitata* Gn.; 2♂, St. Mary's, B. C., 12.VII.1926 (A. A. Denny); 1♂, Norway Bay, Que., 30.III.1939, ex. *Semio-*

*thisa minorata* Pack.; 1 ♂, York Co., N. B., emerged Feb. 23, 1942, ex. *Semiothisa sexmaculata* Pack.; 21 ♀, reared from *Semiothisa granitata* Gn. by the Forest Insect Survey 1938-1942, Que. (Rimouski, L. Cayamont, Farellton, Gd. L. Victoria, Aumond, L. Wapigonic, Bersimus Mills, Eagle Depot); Ont. (Deax Rivieres, Kapuskanino, Lac Caribou, Malbaie, Rossport); New Brunswick (Northumberland Co.) and Nova Scotia (Truemanville).

***Chaetophlepsis polita* n. sp.**

Abdomen mostly shining black; occipital hairs yellow; one orbital bristle in the male; claws and pulvilli of male long.

*Male.* Length 4-6 mm. Vertex one-third head width, the front slightly widened anteriorly; frontalia four times parafrontal width; one proclinate orbital; third antennal segment broad, reaching to the vibrissae, four times the length of the second segment; parafacials narrow, one-third the width of the third antennal segment; facialia bristled to the base of the second antennal segment; cheek one-third eye height. Head including frontalia heavily grey pollinose; antennae black, the second segment red tipped; arista brown ringed; palpi yellow, a little darkened at the base; occipital hairs light yellow.

Thorax dark, wholly grey pollinose. Wings clear, veins yellow; squamae and halteres yellow. Legs black, the tibiae reddish yellow; claws and pulvilli as long as the last tarsal segment.

Abdomen mostly shining black, lightly shining grey pollinose on the anterior fourth of segments two, three and four; second segment with one discal and one marginal pair of bristles; third segment with a discal pair and an incomplete marginal row; fourth segment with a discal row and a marginal row.

*Female.* Vertex one-third head width; head yellowish grey pollinose; antennae black, the second segment brown; occipital hairs yellow; abdomen subshining black, the bluish grey pollen heaviest on the anterior fourth of the segments; otherwise, except for sexual differences, as in the male.

*Holotype*—♂, Agr. Col. Miss., IV.23.1921 (H. W. Allen); No. 5521 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Aylmer, Ont., 18.VII.1924 (C. H. Curran).

The genus *Chaetophlepsis* TT. may be divided into three groups for identification purposes—1. Males lacking orbital bristles although the parafrontal hairs may be stout (*tarsalis* TT., *townsendi* Smith). 2. Males with one orbital (*semiothisa* n. sp., *polita* n. sp.). 3. Males with two orbitals (*orbitalis* Webber). One other named species, *C. ucayali* TT. (Rev. Chil. Hist. Nat., 32, 379, 1929), occurs in Peru.

**Genus *Lypha* R. Desvoidy**

1830—Ess. Myod., 141, genotype *Tachina dubia* Fall.

Except for one species, *L. maculipennis* Ald., the North American species of *Lypha* have been going under the European name *Lypha dubia* (Fall.). A study of the Canadian *Lypha* shows that none of the species are identical with the European form.

The following key will separate the Canadian species.

1. Small crossvein (R<sub>4</sub>) infuscated; tip of scutellum red.....*maculipennis* Ald.  
The area over R<sub>4</sub> not darkened; scutellum dark ..... 2
2. Male with two strong orbital bristles; parafrontal hairs not extending to the lowest frontal bristle; species 3-4 mm. long.....*parva* n. sp.  
Male without orbital bristles; larger species ..... 3
3. Vertex of male greater than one-fourth head width; pulvilli shorter than the last tarsal segment ..... 4  
Vertex of male less than one-fourth head width; pulvilli as long or longer than the last tarsal segment ..... 5
4. Front greyish pollinose; mesonotum subshining; vertex of male just under one-third head width; third antennal segment not nearly twice as wide as the parafacials .....*intermedia* n. sp.

- Front yellowish pollinose; mesonotum distinctly pollinose; vertex of male fully one-third head width; third antennal segment nearly twice as wide as the parafacials ..... *frontalis* n. sp.
5. Wings darkened anteriorly and basally; hairs on the parafrontals stout and extending to the lowest frontal bristle, often appearing like an extra frontal row; parafacials two-fifths as wide as the distance between the vibrissae, not narrowed below ..... *fumipennis* n. sp.
- Wings nearly clear; parafrontal hairs fine, not extending to the lowest frontal bristle; parafacials about one-third as wide as the distance between the vibrissae and somewhat narrowed below ..... *setifacies* (West.)

### ***Lypha setifacies* (West)**

*Didyma setifacies* West, Jour. N. Y. Ent. Soc., XXXIII, 124, 1925—holotype ♂, Albany, New York (Cornell).

This species is exceeding close to *L. dubia* (Fall.), and the adults are separated only by minor characters. The first stage maggot, however, shows very distinct differences from the European species.

**Male.** Length 6.8 mm. Vertex one-fifth to one-fourth head width, the front broadly widened at the antennae, the parafrontals set at a steep angle; frontalia twice as wide as the parafrontals, dark brown; frontal bristles extending five or six below the antennal base; parafrontal hairs fine, not extending to the lowest frontal; third antennal segment over twice as long as wide, twice as long as the second segment; parafacials well narrowed below, as wide as the third antennal segment below, one-third as wide as the distance between the vibrissae; facialia bristled to the lowest frontal; cheek one-third eye height; eye thickly haired. Head wholly grey pollinose; palpi brown; antennae black; occipital pile white.

Thorax dark, mesonotum subshining, four narrow vittae evident on the prescutum; acrostichals 3.3; dorsocentrals 3.3; intraalars 1.3; supraalars 1.3. the central one behind the suture very long and stout; lateral scutellars 3, very long; apical scutellars fine, decussate; pteropleural reaching to the apex of the squamae. Legs black; claws and pulvilli as long as the last tarsal segment. Wings clear, the anterior cells slightly brownish, veins brown; squamae translucent.

Abdomen black with variegated greyish brown pollinosity, more brownish on the posterior half of the segments, greyish on the anterior half; two pairs of discs on the intermediate segments; abdominal hairs long and erect, often appearing as bristles; first genital segment shining black; forceps broad, widened at the apical third; accessory processes triangular.

**Female.** Vertex two-sevenths head width, front evenly widened; two proclinate and one reclinate orbital; mesonotum heavily brownish grey pollinose with four distinct vittae; claws and pulvilli short; front tarsi not widened; otherwise except for sexual differences as in the male.

**Host and Distribution.**—This species is one of the major dipterous parasites on the spruce budworm, *Archips fumiferana* Clem., in Ontario and Quebec. The females lay maggots on the foliage of spruce and fir early in June, the maggot development being completed in about a month. The maggot leaves the host to pupate, remaining in the pupal stage until the following May when they emerge in immense numbers.

Specimens in the Canadian Collection reared from *Archips fumiferana* are from the following localities—in Ontario (Chapleau, Stackpool, Gogama, Jamot, North Bay, Thor Lake, Crerer), in Quebec (Laniel, Cantley). Additional specimens are from Manitoba (Aweme), Ontario (Bothwell, Black Rapids); Quebec (Chelsea, Kirk's Ferry, ex. *Archips rosaceana* Harr., Wright); New York (Albany, Ithaca, Oswego, Tuxedo); New Brunswick (Fredericton).



***Lypha fumipennis* n. sp.**

A much hairier species than *setifacies*, with broader parafacials and darker wings.

*Male.* Length 6-7 mm. Vertex just over one-fifth head width; frontal bristles extending 6-7 below the antennal base; parafrontal hairs comparatively coarse and dense, in two or three rows, extending to the lowest frontal, often nearly as strong as the frontals; third antennal segment five times as long as wide, not as wide as the parafacials; parafacials equibroad, not narrowed below, three-eighths or more as wide as the distance between the vibrissae. Head heavily greyish yellow pollinose with a golden tinge on the front; antennae black; palpi yellow or brown.

Mesonotum subshining black, vittae distinct only in front; thoracic hairs long and comparatively dense. Claws and pulvilli long. Wings darkened on the anterior half and along the veins, veins brown; squamae dark yellow.

Abdomen black, with variegated greyish brown pollen; two discal pairs on the intermediate segments; abdominal hairs long, dense and stout, many equal in size to the discals. First hypopygial segment shining black; forceps narrow, strap-like, hardly widened, the edges nearly parallel; accessory processes narrowly triangular.

*Female.* Vertex just over two-sevenths head width; two proclinate, one reclinate orbital present; parafacials broad; frontal hairs in two rows. Thorax heavily greyish brown pollinose with four distinct vittae; claws and pulvilli short; squamae mostly white with yellow margin; otherwise, except for sexual characters, as in the male.

*Holotype*—♂, Lillooet, B. C., V.1.17 (J. D. Tothill); No. 5523 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data as type.

*Paratypes*—5 ♂, 2 ♀, same data as type.

***Lypha frontalis* n. sp.**

Readily recognized in the male by the broad vertex, narrow parafacials, short claws and pulvilli and the heavily pollinose mesonotum; in the female by the somewhat wider antennae and more prominent front.

*Male.* Length 6 mm. Vertex one-third head width, the front widened at the antennae; frontalia equibroad, twice as wide as the parafrontals; third antennal segment twice as long as broad, nearly twice as wide as the parafacials; frontal bristles extending four below the antennal base; parafrontal hairs long and fine, not extending to the lowest frontal; no orbitals; outer vertical bristle strong, parafacials as broad as the third antennal segment above but well narrowed below; cheek two-fifths eye height. Antennae black; frontalia brown; palpi yellow; head wholly greyish yellow pollinose.

Thorax black, wholly heavily greyish yellow pollinose with four distinct vittae. Claws and pulvilli shorter than the last tarsal segment. Wings clear, the subcostal cell slightly darker; a well marked though short stump present at the cubitus; squamae white, tinged with yellow.

Abdomen variegated with grey and brown pollen; discals doubled on the intermediate segments; first hypopygial segment shining black; forceps long, strap-shaped, slightly widened at the centre but nearly equibroad.

*Female.* Vertex five-thirteenths head width, the front evenly widened anteriorly; two proclinate and one reclinate orbital; third antennal segment narrower than in the male, two and one-half times as long as broad, one and a half times as wide as the parafacials at the narrowest; otherwise, except for genitalia, as in the male.

*Holotype*—♂, Ottawa, Ont., 24.VI.1941 (A. R. Brooks); No. 5524 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Ottawa, Ont., 2.VI.1927 (C. H. Curran).

***Lypha intermedia* n. sp.**

This species bridges the gap between *setifacies* and *frontalis*; the widths of the male vertex, antennae and parafacials are more or less intermediate between the two species.

*Male*. Length 6 mm. Vertex about 0.28 head width; front parallel-sided on the posterior third; frontal bristles five below the antennal base; parafrontal hairs fine, in one row, not extending to the lowest frontal; outer vertical bristle strong; third antennal segment three times as long as broad, nearly three times as long as the second segment, about one and a half times as wide as the narrowest part of the parafacials, truncate at the apex; parafacials narrowed below, one-third as wide as the distance between the vibrissae. Antennae black; palpi brown; head wholly dark grey pollinose with no yellowish tinge.

Mesonotum subshining black, vittae not distinct; thoracic hair sparse. Claws and pulvilli shorter than the last tarsal segment. Wings clear, slightly brownish anteriorly; veins brown; squamae greyish yellow.

Abdomen variegated grey and brown pollinose; discs doubled on the intermediate segments; abdominal hair long, fine and erect, subappressed on the second segment.

*Female*. Vertex 0.30 head width; front and face evenly widened from the vertex, wholly grey pollinose, without a yellowish cast. Thorax lightly pollinose, the four shining vittae more or less distinct; squamae white; otherwise, except for sexual differences, as in the male.

*Holotype*—♂, Gogama, Ont., reared from *Sciaphila duplex* Wlsh. emerging in the incubator in January; No. 5525 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data as type.

*Paratype*—1 ♀, Tionaga, Ont., otherwise with same data as the type.

***Lypha parva* n. sp.**

This species is readily distinguished from the others in the male by the broad front, orbital bristles, very broad antennae and short pulvilli. Except in size the female is very like *setifacies*.

*Male*. Length 4 mm. Vertex one-third head width, the front broader at the antennae; outer vertical bristles strong; two proclinate orbitals present; parafrontal hair fine; frontal bristles extending five below the antennal base, reaching well below the arista; facialia bristled with fine bristles nearly to the lowest frontal; parafacials narrow, about one-third as wide as the third antennal segment; third antennal segment very broad, rounded-truncate at the tip. Antennae black; front, face, cheeks and occiput greyish pollinose; frontalia dull reddish; palpi yellow.

Thorax dark, heavily greyish pollinose, the mesonotum with four distinct vittae; chaetotaxy as in *setifacies*. Legs black, claws and pulvilli shorter than the last tarsal segment. Wings clear; veins brown; squamae ivory.

Abdomen black with variegated brownish grey pollen, the pollen more greyish along the anterior margin of the segments; two pairs of discs on segment two, one on segment three; abdominal hairs long and erect. First genital segment shining black; forceps strap-shaped, equibroad, with rounded tip.

*Female*. Third antennal segment narrower than in the male, about one and a half times as wide as the parafacials; pollen of head somewhat yellowish; two proclinate and one reclinate orbital; otherwise similar to the male.

*Holotype*—♂, Mer Bleue, near Ottawa, Ont., 10.V.1938 (G. E. Shewell); No. 5556 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Mer Bleue, Ont., 3.VI.1938 (A. R. Brooks).

*Paratype*—♀, Northern Ontario, Can., no other data.

**Lypha maculipennis** Aldrich

*Lypha maculipennis* Aldrich, Proc. U. S. Natl. Mus., LXIX, Art. 22, 24, 1926—holotype ♀, Forks, Washington (Cal. Acad. Science).

There is one specimen of this species in the collection, a female reared from an unknown tortricid at Forestville, Quebec.

This species differs from true *Lypha* by the long, truncate third antennal segment, three and a half times as long as the second; longer arisal joint; facialia bristled only immediately above the vibrissae; the distinct posterior presutural intraalar; the entire absence of an intrapostsupraalar bristle; the presence of a distinct patch of setulae on the lateral plates of the postscutellum; female with very broad front tarsi. The puparium is a light shining brown, without the rugosity of *Lypha* spp., and the spiracular opening is definitely above the central longitudinal line; end of puparium somewhat protuberant; spiracular plates very small, separated by a distance greater than the width of one plate; slits three in number, straight.

In the various adult characters this form approaches the genus *Homalactia* Townsend, one of the Actiini, and it appears to be closer to that genus than to *Lypha*.

**Genus *Gymnocheta* R-Desvoidy**

1830—Ess. Myod., 371, genotype *Tachina viridis* Fall. (1810).

This genus of bright metallic green or purple flies is represented in Canada by four species. In the following key, *Chrysotachina alcedo* (Lw.) is included for comparison. The key is to the males only.

1. Third antennal segment nearly three times as long as the second, about twice as wide as the narrow parafacials; lateral postscutellar plates setose; cubitulus with a very short stump; three post-dorsocentrals ..... *Chrysotachina alcedo* (Lw.)  
Third antennal segment not twice as long as the second, about as wide as the parafacials; lateral plates bare; cubitulus with a long stump; four post-dorsocentrals ..... *Gymnocheta* ..... 2
2. Antennae and palpi wholly orange-yellow ..... *ruficornis* Will. 3
3. Antennae mostly black ..... 3
3. Palpi yellow; male vertex one-sixth head width; frontal bristles not doubled below; accessory processes clubbed at the tip ..... *rufipalpis* n. sp.  
Palpi usually dark brown or black; accessory processes slender ..... 4
4. Frontal bristles doubled below; male vertex one-sixth to one-fifth head width; second antennal segment red or brown ..... *virida* Will.  
Frontal bristles not doubled below, second antennal segment dark ..... 5
5. Male vertex over one-fourth head width; third antennal segment not twice as long as broad; forceps not half as wide as long ..... *frontalis* n. sp.  
Male vertex at most one-fifth head width; third antennal segment twice as long as wide; forceps half as wide as long (Europe) ..... *viridis* (Fall.)

***Gymnocheta rufipalpis* n. sp.**

*Male*. Length 12 mm. Vertex one-sixth head width; frontal bristles extending four below the antennal base, not doubled below; third antennal segment twice as long as wide. Front and face grey pollinose; cheek groove reddish; cheek and occiput subshining green with thin greyish pollen; second antennal segment and palpi yellow; occipital pile pale yellow. Thorax wholly metallic green with a purplish shade on the scutellum; wings clear, veins dark; squamae white; halteres brown. Legs black; femora grey pollinose posteriorly; claws and pulvilli long. Abdomen metallic green with a purplish shade on the basal segments; discs tripled on the intermediate segments; forceps bent ventrally at a sharp angle, the tip rounded acute, twice as long as wide; accessory processes extending well beyond the tip of the forceps, with an enlarged tip resembling a club.

*Holotype*—♂, Vancouver, B. C., 19.V.16 (R. S. Sherman); No. 5528 in the Canadian National Collection, Ottawa.

***Gymnocheta frontalis* n. sp.**

*Male.* Length 11 mm. Vertex just over one-fourth head width; frontal bristles extending three below the antennal base, not doubled below; third antennal segment three-fourths as broad as long. Front and face grey pollinose, the metallic green showing along the frontal row; frontalia brown; cheek groove reddish; cheek and occiput metallic green, with thin greyish pollen; antennae and palpi black, the second antennal segment slightly reddish at the apex; occipital pit pale yellow. Thorax metallic green, with four narrow opaque vittae; wings clear, veins yellow; squamae white; halteres yellow. Legs black, the femora thinly grey pollinose posteriorly; claws and pulvilli long. Abdomen metallic green; discs doubled on the intermediate segments; genitalia black; forceps long, the tip recurved and rounded, side of forceps with stiff hairs; forceps more than twice as long as broad; accessory processes about even with the tips of the forceps and wholly slender.

*Holotype*—♂, Mt. Lolo, Kamloops, B. C., 2.VI.1938 (J. K. Jacob); No. 5529 in the Canadian National Collection, Ottawa.

*Paratype*—♂, Cypress Hills, Alta., June 27, 1939 (W. S. McLeod); in the University of Alberta collection.

***Thelaira americana* n. sp.**

This species has been known in America under the name *Thelaira nigripes* F., but an examination of European specimens of *nigripes* shows a number of differences that will separate the two.

*Male.* Length 11-13 mm. Head wholly silvery pollinose, the parafrontals somewhat yellowish; antennae black, the second segment brownish; frontalia deep velvety brown; palpi yellow, somewhat darkened at the base. Thorax black; thinly grey pollinose; the mesonotum showing four darker vittae before the suture, three behind. Legs black, tibiae brownish. Wings hyaline, the base and veins yellow; squamae white, yellow-tinged; halteres brown. Abdomen wholly black or broadly red at the sides of segments one, two and three, grey pollinose on the anterior half of segments two, three and four; genital segments yellow, the first darkened basally or wholly dark.

Vertex two-elevenths head width (in *nigripes*, one-fifth or more); third antennal segment as wide as the parafrontals at their narrowest and twice as long as the second segment (in *nigripes*, third antennal segment narrower than the parafrontal and three times the second); mid tibiae with two or three stout anterodorsals and two stout posterodorsals (in *nigripes*, with one strong anterodorsal and two short, weak posterodorsals); third abdominal segment with one or two pairs of discs; forceps convex when viewed in profile, longer than the accessory processes; accessory processes broadly rounded, triangular.

*Female.* Vertex about one-fourth head width; two proclinate orbitals present; abdomen shining black, the silvery grey pollinosity confined to the anterior half of segments two and three, the pollinose bands broadly interrupted in the centre; otherwise, except for sexual differences, as in the male. One European female of *nigripes* in the collection has the abdomen wholly greyish pollinose except for the posterior half of the fourth segment.

*Holotype*—♂, Aylmer, Que., 24.VI.1924 (C. H. Curran); No. 5527 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Aylmer, Que., 27.VI.1924 (C. H. Curran).

*Paratypes*—1 ♂, Lynn Woods, Mass., 20.VIII.10 (J. D. Tothill); 2 ♂, Melrose Highlands, 18.VIII.10 (J. D. Tothill); 1 ♂, Aylmer, Que., 7.VI.1927 (C. H. Curran); 1 ♂, Orillia, Ont., 7.VII.1925 (C. H. Curran); 2 ♂, Jordan, Ont., 4.V.1915, 21.6.1919 (W. A. Ross); 2 ♂, 2 ♀, near Nahant, Mass., 16.9.08; 1 ♂, Ile de Montreal, 19.VII.06; 1 ♂, Hull, Que., 30.V.03; 2 ♂, Niagara Glen, Ont., 23.V.1926 and 24.V.1926 (G. S. Walley); 2 ♀, Melrose Highlands, Mass., 18.VIII.10, 15.IX.09 (J. D. Tothill); 2 ♀, Aylmer, Que., 6.7.1926,

15.7.1926 (C. B. Hutchings); 1 ♀, Vernon, B. C., 9.VIII.1923 (D. G. Gillespie); 1 ♀, Lyn, Ont., 7.VII.1926 (C. H. Curran); 1 ♀, Kentville, N. S., July 9, 1924 (R. P. Gorham); 1 ♀ Galt, Ont., 14.VI.41 (G. H. Hammond); 1 ♀, Lynn Woods, Mass., 20.VII.10 (J. D. Tohill); in the Canadian National Collection, Ottawa. 8 ♂, Amherst, Ohio, July, 1933 (H. J. Reinhard); 5 ♂, College Station, Texas, Aug. 3, 1942 (H. J. Reinhard); 7 ♂, College Station, Texas, May 15, 18, 19, 22, 24 and 26, 1943 (H. J. Reinhard); in H. J. Reinhard's Collection.

***Pseudotachinomyia longiforceps* n. sp.**

This species is related to *slossonae* TT. (*webberi* Smith) and to *compascua* Rnh., having the parafacial width intermediate between the two, not narrowed below as in *slossonae* but about as wide as the third antennal segment throughout; head wholly chalk-white pollinose; male forceps narrow, nearly parallel sided and about four times as long as broad. Reinhard (Ent. News, XLVI, 132, 1935) has reviewed the genus.

*Male.* Length 11 mm. Antennae black; arista and frontalia brown; palpi yellow; head wholly white pollinose, no yellowish tinge. Vertex one-third head width, the front widening to nearly half head width at the antennae; parafacials only slightly narrowed below and just wider than the third antennal segment; antennae not reaching to the vibrissae, the third segment three times as long as the second; arista thickened one-third way; cheek just over one-third eye height; eleven frontal bristles, the two posterior reclinate, extending four below the antennal base; parafrontals with fine hairs; facialia bristled in two rows to near the lowest frontal; palpi stout, as long as the haustellum plus the labellum.

Thorax black, lightly grey pollinose, with four dark vittae in front of the suture, five behind; chaetotaxy as in *slossonae*. Wings clear; veins brown; squamae white. Legs black, grey pollinose.

Abdomen black, with greyish pollen on the anterior two-thirds of the segments and brownish pollen on the posterior third, the first segment wholly dark; a strong pair of discal bristles on segments two and three and a discal row on segment four. First two hypopygial segments black, grey pollinose; forceps and accessory plates shining black or brown; forceps very long, four times as long as broad, slightly broadened on the apical third, nearly equibroad, the ventral edge sinuate.

*Female.* Except for sexual differences the female is similar to the male. It may be separated from *slossonae* by the wider parafacials and wholly white pollinose head, from *compascua* by the slightly narrower parafacials and the stout abdominal discals. The piercer is similar to that of *slossonae*.

*Holotype*—♂ Ottawa, Ont., 23.IV.1938 (G. E. Shewell); No. 5515 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Aylmer, Que., 11.V.1925 (G. S. Walley).

*Paratype*—1 ♀, Nominingue, Que., 12.VI.1941 (O. Peck).

***Ceromasia borealis* n. sp.**

In Canada there are three species of *Ceromasia*, but their identity has been obscured by the lumping of the forms under the name *Erycia rutila* Meigen (Curran, Can. Ent., LIX, 17, 1927). The true *Erycia rutila* (Meigen) is quite a different species from the three in *Ceromasia* and does not occur in North America.

The new species may be characterized as follows:

*Female.* Length 10 mm. Antennae and arista black, the second antennal segment brownish; arista thickened three-fourths of the way; head grey pollinose, the front yellowish; face, cheeks, parafacials and occiput grey; occiput with white hairs; frontalia deep brown; palpi yellow; vertex two-fifths head width; parafacials one-half clypeal width at the centre; facialia with two or three bristles above the vibrissae; cheek over one-third eye height; frontal bristles three below



the antennae base, rather widely spaced, reaching two below the arisal insertion; two proclinate and one reclinate orbital plus two or three other stout bristles on the parafrontals.

Pleura and mesonotum wholly yellowish grey pollinose, the mesonotum showing four narrow vittae; scutellum reddish yellow on the apical half. Legs mostly black, the tibiae reddish. Wings clear, the veins strongly yellow; third vein with four stout bristles at the base; squamae white, with a yellow border.

Abdomen robust, wholly greyish or greyish yellow pollinose, the incisures somewhat darker; all segments colored the same. One pair of stout discs on the intermediate segments and the second segment with an additional small pair in front.

*Male*. Slightly smaller than the female; vertex two-fifths head width; parafrontals without orbitals but stout reclinate bristles present; head color similar to that of female. Thorax, wings, legs and abdomen colored as in the female; claws and pulvilli three-fourths as long as the last tarsal segment; genitalia similar to those of *aurifrons* TT. and *auricaudata* TT. (1908).

*Holotype*—♀, Cameron Bay, Great Bear Lake, N. W. T., 27.VIII.1937 (T. N. Freeman); No. 5537 in the Canadian National Collection, Ottawa.

*Allotype*—♂, Banff, Alta., 3.VIII.1922 (C. B. D. Garrett).

*Paratypes*—2 ♀, same data as type, dated 28.VIII.1937 and 14.VIII.1937; 1 ♀, Banff, Alta., 24.VII.1917 (N. B. Sanson).

#### *Eufrontina* n. gen.

*Genotype*—*Frontina spectabilis* Aldrich, Can. Ent., XLVIII, 21, 1916; holotype ♀, Waubanic, Parry Sound, Ont., in the Canadian National Collection, Ottawa.

This genus is one of the *Achaetoneura* complex, the type species having been classified as *Achaetoneura spectabilis* (Ald.) by Webber Proc. U. S. Natl. Mus., LXXVIII, Art. 10, 1930). The two species are wholly golden pollinose.

Length 4-8 mm. Black, wholly golden pollinose. Head one-third wider than high; the flat or slightly convex front about two-thirds the length of the face; face slightly convex; axis of oral margin five-eighths as long as the antennal axis, the antennae above the middle of the eye; clypeus parallel-sided, over twice as long as wide; epistoma cut short at the vibrissae; facialia bristled over half way; vibrissae stout, the tips decussate; two or three frontal bristles below the antennal base; ocellars strong, proclinate; outer verticals and orbitals absent in the male, present in the female; third antennal segment six times the length of the second in the male, three or four times the second in the female; arista bare, thickened three-sevenths of the way, the second segment longer than diameter of the arista; palpi stout; vertex one-third to one-fourth head width, slightly wider in the female than in the male; frontalia half parafrontal width; parafacial half clypeal width, narrowed below; cheek one-fifth eye height.

Acrostichals 3.3; dorsocentrals 3.4; intraalars 2.3; supraalars 2.3; lateral scutellars 3; apical scutellars weak, decussate; discal scutellars 1; sternopleurals 3; prosternum bristled. Apical cell narrowly open well before wing tip;  $M_3$  sinuate, nearer the cubitus. Hind tibiae loosely pectinate with one larger bristle. Abdomen short and stout; segments one and two with marginals; segment three with a marginal row and generally with a pair of discs although these may be absent in the male; segment four with discal and marginal rows. Anal forceps short, double, narrow; accessory processes longer than the forceps, narrow, scythe-shaped; sternites covered. Female ovipositor telescopic, not piercing, the eighth sternite rounded at the tip.

Puparium small, reddish, somewhat protuberant at the posterior end; tubercles large and black, situated at or slightly above the longitudinal axis, well separated (very similar to that of *Tortricophaga tortricis* Cq.—Greene, Proc. U. S. Natl. Mus., LX, Art. 10, No. 32); spiracular slits apparently five in number, variable as to shape, some short and straight, others U-shaped, each on a definite ridge.

For purposes of comparison with *ethniae* n. sp., *Eufrontina spectabilis* Ald. may be characterized as follows: Length 6-8 mm.; male front equibroad on the posterior half then suddenly widened anteriorly; claws and pulvilli of male long; vertex of male under one-third head width; females with well developed discal bristles on the third abdominal segment, these lacking in the male. Besides the female holotype, the Canadian National Collection contains a number of specimens of *spectabilis* from Quebec (Laniel, Kingsmere, Abbotsford, Meach Lake, Matheson); Manitoba (Aweme) and British Columbia (Trinity Valley, Seton Lake). The Matheson specimen was reared from *Tetralopha asperatella* Clem.; its puparium is dark brown, with the tubercles massive and the end of puparium hardly protuberant.

***Eufrontina ethniae* n. sp.**

A smaller species than *spectabilis*, with wider vertex and shorter pulvilli in the male.

**Male.** Length 4-5 mm. Thorax and abdomen clothed with dense golden pollen. Vertex one-third head width, the front evenly widened to the antennae; frontal profile slightly convex, golden pollinose, the frontalia dark brown; third antennal segment five or six times as long as the second, black; second arisal segment not elongate; parafacials well narrowed below, silvery pollinose; cheek one-fifth eye height. Thorax wholly golden with four short dark vittae; wings clear; squamae yellowish; claws and pulvilli short, about the length of the last tarsal segment. Abdomen golden pollinose, slightly darker along the posterior margins of the segments.

**Female.** Except for sexual differences, the female is similar to the male; vertex one-third head width; front with two proclinate orbitals; third antennal segment four to five times the length of the second.

**Holotype**—♂, Ottawa, Ont., emerged 4.II.1933 from *Ethnia longimaculella* Clem. on *Lithospermum officinale* L. (J. McDunnough); No. 5526 in the Canadian National Collection, Ottawa.

**Allotype**—♀, same data as type except emergence on 27.II.1933 (J. McDunnough).

**Paratypes**—5 ♂, 4 ♀, Ottawa, Ont., March 17 to 31, 1934 (C. H. Young) reared from *Ethnia longimaculella* Clem.

***Phytomyptera walleyi* n. sp.**

This species is readily separated from the common *Dichaetoneura leucoptera* John. by the small size, clear wing and lack of bristles on the first vein. In Greene's key to the forms without the fourth vein (Proc. Ent. Soc. Wash., XXXVI, 27, 1934) it keys to *Phytomyptera nigrina* M.

**Female.** Length 3.5 mm. Head wholly bluish grey pollinose; basal antennal segments yellow, third antennal segment and arista black; palpi brown. Front convex and well sloped; vertex half as wide as the head, the front slightly widened at the antennal base; frontalia about two-thirds as wide as the parafrontalia, equibroad; five frontal bristles, widely spaced; two proclinate and one reclinate orbital, also four or five stout proclinate hairs on the parafrontals; eye small and round; cheek half eye height; antennae not reaching to the vibrissae; third antennal segment rectangular, nearly twice as long as broad; arista short, evenly tapered to the tip, the first and second segments lengthened; parafacials narrowed below to about facialia width; facialia bristled nearly half way, the bristles becoming shorter and finer above; palpi short and much enlarged apically.

Thorax entirely bluish grey pollinose; acrostichals 3.3 (4?); dorsocentrals 2.3; intraalars 2.3; supraalars 2.3; lateral scutellars 2, apical scutellars erect. Wing clear;  $M_1$  and  $M_3$  absent; one bristle at the base of  $R_5$ , other veins bare; veins brownish; squamae white. Legs black.

Abdomen mostly shining black, thinly grey pollinose on the anterior lateral margins of segments two, three and four, leaving a broad black vitta in the centre; first segment without bristles; second segment with a marginal row; third segment with a discal and marginal row; fourth segment with discal and marginal rows.

*Holotype*—♀, Kazubazua, Que., 16.VIII.1927 (G. S. Walley); No. 5532 in the Canadian National Collection, Ottawa.

*Paratype*—1 ♀, Bass Lake, Ont., Forest Insect Survey, 43-242A, reared from *Zeiraphera ratzeburgiana* Ratz., emerged 28.VI.1943.

### *Eutricogena polita* n. sp.

This species is very similar to *E. clesides* (Wlk.) but can be separated from it by the narrower frontalia, more shining mesonotum, more highly polished abdomen and broader, darker wing markings.

*Male*. Length 7 mm. Head wholly dull grey pollinose, the pollinosity of the front thinner; antennae and arista black; palpi brown; vertex about one-third head width; frontalia two-fifths vertex width, equibroad; third antennal segment twice as long as broad, wider apically than at the base; second aristal segment over twice as long as broad; seven or eight strong bristles and paired hairs between the bristles on the parafacials; two or three weak proclinate orbitals.

Thorax black; mesonotum very thinly pollinose, the vittae indistinct except in front; the mesonotum with a very decided bluish shade; chaetotaxy as in *clesides*, propleura haired. Wings clear, veins brown, bordered with brown;  $R_5$  bristled to beyond  $R_6$ ;  $M_1$  strongly bent inwards; petiole of apical cell about as long as  $R_6$ ; squamae white. Legs black.

Abdomen mostly shining bluish black, silvery grey pollinose on the anterior third of segments two, three and four; one pair of discals on the intermediate segments; two discal and one weaker marginal row on segment four.

*Female*. Except for sexual and secondary sexual characters the female is very similar to the male. The bluish mesonotum and abdomen and the brown-bordered wing veins will separate it from *clesides*.

*Holotype*—♂, Agassiz, B. C., 8.V.1926 (R. Glendenning); No. 5533 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Cultus Lake, B. C., 20.X.1938 (J. K. Jacob).

*Paratype*—♀, Cultus Lake, B. C., 27.X.1938 (J. K. Jacob).

The more common *E. clesides* Wlk. is represented in the Canadian National Collection by a number of specimens from Ontario (Burke Falls, Lake Nipigon), Quebec (Laniel), Saskatchewan (Cypress Hills), Alberta (Edmonton, Slave Lake) and British Columbia (Trinity Valley, Salmon Arm). *Peteina ontario* Curran (Can. Ent., LVIII, 87, 1926) belongs in this genus and appears to be *clesides*.

### *Petinops labradorensis* n. sp.

The genus *Petinops* BB. is closely allied to *Eutricogena* TT. from which it may be separated by the bare propleura and more elongate second aristal segment. In Curran's manual the genus would be included in *Wagneria* RD.

*Male*. Length 6 mm. Head black, greyish pollinose, the parafrontalia subshining; antennae and arista black; palpi yellow. Vertex one-third head width, front and face evenly widened from the vertex; frontalia equibroad, one and a half times as wide as the parafrontals; three to five proclinate and one reclinate orbital; frontal bristles one below the antennal base; ocellar bristles divaricate, very slightly proclinate; parafacials with a row of seven strong proclinate bristles extending to the lower level of the eye and a scattered row of hairs outside this row; cheek three-sevenths eye height; third antennal segment

over twice as long as wide, five times as long as the second segment; arista bare, thickened two-thirds of the way, the second segment elongate.

Thorax black, mesonotum and scutellum shining, pleura thinly grey pollinose; acrostichals 2.2; dorsocentrals 2.3; intraalars 1.3; supraalars 1.3; lateral scutellars 2; apical scutellars weak, erect, preapical; pteropleural bristle very weak; propleura bare. Wing clear, the veins faintly bordered with brown; costal spine as long as  $R_5$ ;  $R_5$  bristled to  $R_6$ , other veins bare, petiole of apical cell one and a half times as long as  $R_6$ ; last section of cubitus half as long as the preceding section; squamae large, round, white with yellowish margins; halteres dark. Legs black; claws and pulvilli about as long as the last tarsal segment.

Abdomen wholly shining black; first segment with no bristles; second segment with a discal and marginal pair; third segment with discal pair and marginal row; fourth segment with three or four irregular discal rows and a weaker marginal row. Genitalia small; forceps not united, the large basal portion suddenly narrowed to slender turned up tips; accessory processes as long as forceps, narrow triangular, curved.

*Female.* Very similar to the male; two proclinate and one reclinate orbital; third antennal segment slightly reddish at the base; claws and pulvilli very short; fourth abdominal segment with two discal and one marginal row.

*Holotype*— $\delta$ , Hopedale, Labr., 3.VI.1928 (W. W. Perrett); No. 5534 in the Canadian National Collection, Ottawa.

*Allotype*— $\varphi$ , Hopedale, Labr., 11.VI.1928 (W. W. Perrett).

*Paratype*— $\delta$ , Hopedale, Labr., 5.VI.1928 (W. W. Perrett).

#### ***Phylacteropoda nigra* n. sp.**

Readily separated from *tarsalis* Coq. (Jn. N. Y. Ent. Soc., III, 56, 1895) by the wholly black, shining body.

*Female.* Length 4.5 mm. Head black; face, cheek and occiput silvery grey pollinose, the parafrontals shining black posteriorly; antennae and palpi black. Vertex four-ninths head width; two proclinate and one reclinate orbital; frontal bristles three below the antennal base; two bristles above the vibrissae on the facialia; third antennal segment rectangular, reaching nearly to the vibrissae, two and a half times as long as wide; second arisal segment very long, first segment also somewhat elongate.

Thorax mostly shining black; humeri, pleura and prescutellar area thinly grey pollinose; acrostichals 3.1, the anterior three hair-like; dorsocentrals 3.3; intraalars 1.3; supraalars 1.3; intrapostsupaalars strong; lateral scutellars 3 the middle one very small; apical scutellars hair-like; sternopleurals 2 with two weaker hairs below. Legs black; pulvilli yellow; last segment of fore tarsus greatly enlarged and widened, five-sixths as long as the other segments together, grooved beneath; claws and pulvilli very short. Wings clear, with a slight brownish tinge particularly along the veins; costal spine nearly as long as  $R_5$ ; apical cell open in the wing tip;  $M_1$  sinuate; squamae white with a yellowish shade in the central region.

Abdomen wholly shining black; first segment bare; second segment with strong central marginal pair of bristles and weaker lateral row; third segment with a marginal row, fourth segment with one discal and a marginal row.

*Holotype*— $\varphi$ , Transcona, Man., 29.VII.24 (G. S. Brooks); No. 5535 in the Canadian National Collection, Ottawa.

(*Clausicella*) *Phylacteropoda tarsalis* Cq., a smaller form with pollinose head and thorax and banded abdomen is represented in the Canadian National Collection by a number of specimens from Ontario (Toronto, Simcoe, Grand Bend, Ottawa) and Quebec (Hull).

#### ***Pseudochaeta canadensis* n. sp.**

*Female.* Length 6-7 mm. Head wholly silvery grey pollinose, without a yellowish tinge; antennae black, the third segment yellowish at the base; palpi

yellow. Vertex 0.31 head width, front and face slightly and evenly widened to 0.4 head width at the vibrissae; frontalia dark brown, equibroad, one third as wide as either parafrontal; two reclinate and two proclinate orbitals plus a few scattered hairs on the parafrontals; facialia bristled to the level of the arista base; frontals two or three below the antennal base; third antennal segment very narrow at the base, somewhat broadened and truncate at the tip, five times as long as wide, four times as long as the second segment.

Thorax black, greyish pollinose, with no yellowish shade; mesonotum showing four narrow vittae; acrostichals 3.3; dorsocentrals 3.4; intraalars 2.3; supraalars 2.3; lateral scutellars 3, the middle one weak; apical scutellars erect, weak, convergent; sternopleurals 2; pteropleural short. Wings clear or slightly whitish, veins brown; two bristles at the base of  $R_5$ ; apical cell open before the wing tip; last section of cubitus over one-third as long as preceding section; squamae white; halteres dark. Legs black; claws and puvilli short.

Abdomen mostly shining black, segments two to four thinly silvery grey pollinose on the anterior fourth; first and second segments with a marginal pair, third segment with a marginal row; fourth segment with discal and marginal rows; abdominal hairs stout and depressed.

*Male.* Similar to the female in color; front wholly silvery pollinose; vertex one-third head width; frontalia line-like; parafrontals with two reclinate orbitals only; third antennal segment seven times as long as the second, equibroad; claws and pulvilli short; forceps long and narrow, straight on ventral edge, slightly widened at the apical third; accessory processes long, very thin, rodlike on the basal three-fourths, strongly clubbed at the tip.

*Holotype*—♀, Laniel, Que., 7.VIII.1940 (C. E. Atwood); No. 5536 in the Canadian National Collection, Ottawa.

*Allotype*—♂, Laniel, Que., 25.VII.1940 (C. E. Atwood).

*Paratypes*—1 ♀, Kapuskasing, Que., Forest Insect Survey No. 5936B, ex. *Lexis bicolor* Grot., emerged 6.VII.1942; 1 ♀, N. D. du Laus, Que., R.I.F. 15164B, ex. *Lexis bicolor*, emerged 27.VII.1942; 1 ♀, Mont Laurier, Que., R.I.F. No. 15108C, ex. *L. bicolor*, emerged 17.VII.1942; 1 ♀, Cheneville, Que., R.I.F. 15468C, emerged 17.VII.1942; 1 ♀, Nipigon R., Man., F.I.S. No. 428, ex. unidentified arctiid, emerged 6.VII.1940; 2 ♀, Jesmond, B. C., 25.VIII.1938 and 29.VIII.1938 (J. K. Jacob).

The above description is similar to that for *argentifrons* Coq. but an examination of specimens taken in the southern states convinces me that the northern and western species is distinct. The southern specimens (Agr. Coll., Miss.) are much smaller, with a decided yellowish tinge to the pollen of the front, thorax and abdomen, and the abdominal fasciae extend half or more of the way from base to apex on the segments although the pollen is thinner behind.

### ***Dolichotarsus* n. gen.**

*Genotype: Dolichotarsus kingi* n. sp.

This genus bears a remarkably close resemblance to *Meigenielloides* Townsend (genotype, *M. cinerea* TT., New Mexico) in characters of thorax, wing and abdomen, and in color. It may, however, be readily separated on the long *Musca*-like postabdomen of the female, the broad antennae, longer legs and the larger, broader head, the male possessing orbital bristles.

Length 4-5 mm. Very slender, greyish yellow pollinose, with long red legs. Head one-fourth wider than high; flat frontal profile moderately sloped, as long as the facial; facial profile somewhat concave, well sloped; clypeus depressed, twice as long as wide, evenly concave; epistoma following clypeal plane, cut short at the vibrissae; oral margin axis five-sevenths antennal axis; antennal axis seven-ninths head height and above eye middle; haustellum one-third head height; palpi but little enlarged, as long as the haustellum; labellum small; first antennal segment erect; second segment short in the male, elongate in the



female; third segment reaching four-fifths of the way to the vibrissae, broadly truncate in the male, three and one-half times as long as the second, slender in the female and twice as long as the second; arista long, second segment short, thickened one-third way, micropubescent; eye large, oblique, reaching nearly to the vibrissae, bare; vertex three-eighths head width in the male, one-third head width in the female; frontal bristles extending two below the antennal base; one or two proclinate and one reclinate orbital in both sexes; inner verticals convergent; outer vertical strong in the male; ocellars strong, proclinate-divaricate; parafacials very narrow below, two-thirds clypeal width at the antennae, only one-sixth this width at the narrowest, bare; facialia narrow, with one or two bristles above the vibrissae; cheek two-sevenths eye height; occiput broadly convex.

Acrostichals 1.3, the presutural far from the suture, the two front post-suturals hair-like; dorsocentrals 2.3; intraalars 1.3; supraalars 1.1; intrapostalar long and hair-like; pteropleural small; sternopleurals 3, the lowest one weak; lateral scutellars 2; apical scutellars hair-like, divaricate; no discal scutellars; lateral postscutellar plates with a few setulae; propleura bare; prosternum with two short bristles. Wings clear; apical cell closed in the margin slightly before the wing tip;  $R_s$  with one bristle at the base; cubitulus very obtuse, two-sevenths wing width from the hind wing margin;  $M_3$  nearer to the cubitulus; last section of  $C_1$  two-sevenths preceding.

Legs long and slender, the tarsi one-third longer than the tibiae; claws and pulvilli short in the male; front tarsi of female not compressed; hind tibia with two or three anterodorsals and two posterodorsals.

Abdomen narrow and elongate, the last segment of the female one-half longer than the other segments; one marginal pair of bristles on the second segment; one marginal pair and a fine discal pair on segment three; a marginal row and a discal pair on three; two scattered discal rows and a fine marginal row on four; sternites covered; postabdomen of female as in *Musca*, long, teleopic; male genitalia small.

#### ***Dolichotarsus kingi* n. sp.**

*Male.* Length 4 mm. Segments two and one of antennae red, segment three black; front, face, cheek and occiput grey pollinose; frontalia lightly brown pollinose. Thorax wholly greyish-brown pollinose, the vittae absent. Wings clear; veins yellow; squamae white; halteres yellow. Legs including coxae mostly red, the tibiae wholly black; pulvilli grey. Abdomen mostly yellowish, the third and fourth segments and a median vitta on segments one and two dark, with yellowish brown pollen.

*Female.* Similar in color to the male, but there is evidence of four narrow vittae on the mesonotum.

*Holotype*—♂, Saskatoon, Sask., June 8, 1927 (K. M. King) reared from a pupa taken on May 27, 1927, in the debris-layer from an *Eleagnus* thicket, apparently in fairly heavy grass and moderately tall *Eleagnus*; No. 5530 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Cut Knife, Sask., 7.VI.1940 (A. R. Brooks).

*Paratypes*—1 ♂, Saskatoon, Sask., June 6, 1927 (K. M. King), with same rearing as holotype; 1 ♂, Saskatoon, Sask., 23.V.1940 (A. R. Brooks); 1 ♀, Cut Knife, Sask., 7.VI.1940 (A. R. Brooks).

#### ***Dolichotarsus griseus* n. sp.**

*Female.* Length 6 mm. Head greyish yellow pollinose; frontalia dark brown; first and second antennal segments and palpi yellow. Thorax wholly greyish pollinose, the mesonotum with four well defined brown vittae. Wings clear, veins brown; squamae dark brown; halteres yellow. Legs including coxae yellow, the tarsi wholly black; posterior tibiae with three anterodorsals. Abdomen wholly black, heavily shining greyish pollinose.

*Holotype*—♀, Trinity Valley, B. C., 16.VI.37 (H. B. Leech); No. 5531 in the Canadian National Collection, Ottawa.

***Aubaeanetia anorbitalis* n. sp.**

The genus *Aubaeanetia* Townsend is closely allied to *Parameigenio* Townsend, the chief differences being the presence of setae on the lateral plates of the postnotum (absent in *Parameigenia*), the two reclinate frontal bristles in the male (normally three in *Parameigenia*), the longer antennae, stronger facialia bristles, and the presence of a distinct although often weak hind presutural acrostichal and hind preintraalar bristle (these lacking in *Parameigenia*). Both genera are closely allied to *Dexodes* BB. and were so considered by Curran (Can. Ent., LIX, 12 and 20, 1927).

*A. anorbitalis* n. sp. differs from *A. assimilis* Townsend, the genotype and only other described species, in that the male lacks the fine hairlike orbital bristles and has elongate claws and pulvilli.

*Male*. Length 6-7 mm. Antennae black, the third segment truncate at the tip, just over two and a half times as long as the second segment; vertex 0.22 head width; parafrontals with a few fine, short hairs next the frontal bristles, otherwise bare; two reclinate frontals, the posterior half the size of the anterior; facialia bristled just over one-third way with rather stout bristles. Frontalia dark brown; parafrontals, parafacials, cheeks and occiput silvery pollinose; palpi yellow.

Thorax black, lightly bluish-grey pollinose, the mesonotum with four narrow, darker vittae evident anteriorly. Acrostichals 3.3, the hind presutural hairlike; dorsocentrals 2.3; intraalars 2.3; the hind preintraalar hairlike; supraalars 2.3; lateral scutellars 3; apical scutellars absent; discal scutellars 1; lateral plates setose. Wings clear; squamae white. Front tibiae with two posterior bristles; mid-tibiae with one short and one long anterior dorsal; claws and pulvilli longer than the last tarsal segment.

Abdomen long and narrow, black; segments two to four greyish pollinose on the anterior half, brownish pollinose to shining on the posterior half. Seg. I with a pair of marginals; Seg. II with one discal and one marginal pair; Seg. III with a discal pair and a marginal row; Seg. IV with discal and marginal rows; abdominal hairs short, suberect. Forceps divided, long-triangular, straight to the rounded tips, as long as the narrow, straplike accessory processes.

*Female*. Vertex 0.25 head width; two stout proclinate orbitals present; claws and pulvilli short, two-thirds as long as the last tarsal segments; a pair of weak hairlike, divergent apical scutellars present; abdomen without carina, ovipositor not piercing; otherwise as in the male.

*Holotype*—♂, Aylmer, Que.; 18.VII.1924 (C. H. Curran); No. 5522 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Aylmer, Que., 18.VII.1924 (C. H. Curran).

*Paratypes*—1 ♂, Aylmer, Que., 10.VI.1924 (C. H. Curran); 1 ♀, Cabin John Br., Md., 27.VI.1923 (J. M. Aldrich).

*Aubaeanetia assimilis* Townsend is represented in the Canadian National Collection by specimens from Havelock, Hastings Co., Pt. Pelee and Orillia in Ontario; Knowlton and Rigaud in Quebec.

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